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## CERTIFICAT D'ADDITION A UN BREVET D'INVENTION

PREMIÈRE ET UNIQUE  
PUBLICATION

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⑤① Classification internationale (Int. Cl.) F 16 m 11/00.

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⑦④ Mandataire : Cabinet Brot, 83, rue d'Amsterdam, 75008 Paris.

⑤④ Dispositif d'articulation pour les jambes d'un trépied.

⑦② Invention de :

③③ ③② ③① Priorité conventionnelle :

⑥① Références du brevet principal : Brevet d'invention n. 72.36475 du 13 octobre 1972.

⑥② Certificat(s) d'addition antérieur(s) :

La présente addition concerne un mode d'exécution du dispositif d'articulation pour les jambes d'un trépied selon le brevet principal.

On rappelle que le dispositif d'articulation pour les jambes d'un trépied, selon le brevet principal, comprend, pour chaque jambe, une tirette coudée coulissant manuellement, coopérant avec des butées latérales du support pour permettre aux jambes du trépied de prendre, entre les deux positions habituelles, de transport et de travail, deux autres positions de travail.

La présente addition a plus précisément pour objet le remplacement de la tirette coudée par un levier monté pivotant sur l'extrémité supérieure des jambes, dont un bras est soumis à l'action d'un ressort et, de façon à ce que l'extrémité de l'autre bras agisse sur les butées latérales du support, à la manière d'un encliquetage, le désencliquetage correspondant pouvant se faire par pression ou par traction sur un des deux bras du levier, selon la nature du levier.

Une forme de réalisation de l'invention sera décrite ci-après, à titre d'exemple non limitatif, avec référence au dessin annexé dans lequel :

La figure unique est une coupe partielle, passant par l'axe d'une jambe et par l'axe de symétrie ternaire du support d'un trépied selon l'invention.

Avec référence à la figure unique, le trépied comprend un support 1 et trois jambes écartées de  $120^\circ$  dont une seule 3 est représentée tournant autour d'un arbre 5 solidaire d'une oreille 7 latérale du support 1, au moyen d'une chape d'articulation 9 à deux joues 11. Cette chape d'articulation 9 comprend également des moyens de fixation d'un axe 13 parallèle à l'arbre 5, sur lequel pivote un levier de première espèce 15. L'extrémité 17 du bras de levier 19 comprend un dispositif pour la fixation d'une terminaison d'un ressort à lame 21, l'autre terminaison s'appuyant sur la chape d'articulation 9. Sous l'action du ressort 21, l'extrémité supérieure 23, du bras 25 du levier 15, vient s'engager contre la butée 27 de l'oreille 7, à la manière d'un encliquetage, pour permettre le blocage de l'écartement du pied 3 selon un angle déterminé. Le déblocage du pied 3 s'effectue en exerçant une pression sur le bras 19 du levier 15 dans le sens de la flèche 29 qui libère la butée 27 et qui permet, en conséquence, le repliement du pied 3.

Il va de soi que l'invention prévoit également l'utilisation

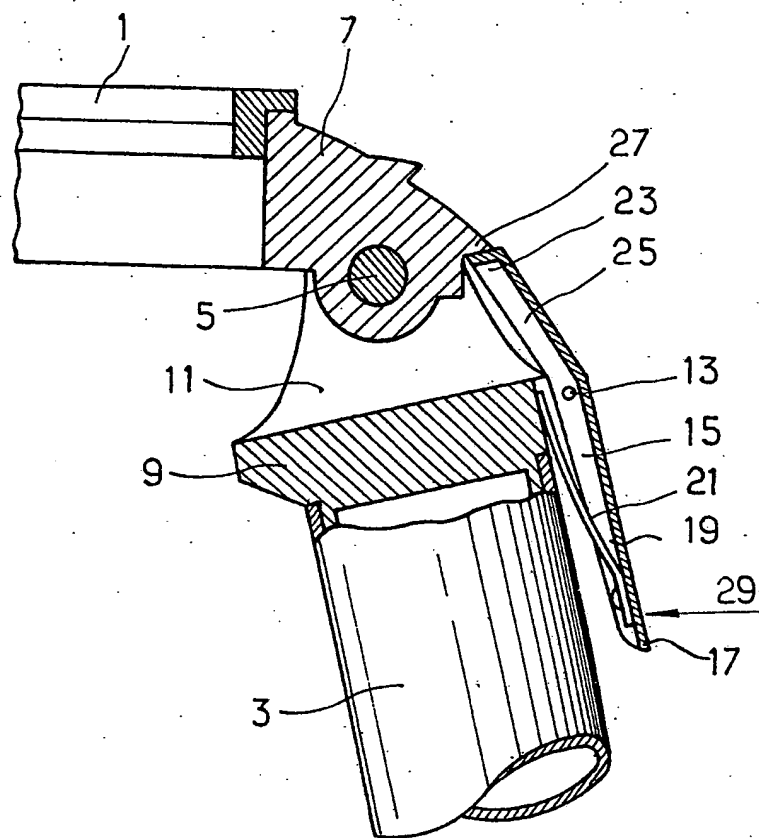
de leviers de formes diverses et de type différent, par exemple des leviers de deuxième espèce, ou de troisième espèce. A cet effet, il est alors nécessaire d'utiliser, selon les cas, des ressorts de pression ou bien des ressorts de traction.

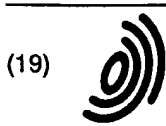
## R E V E N D I C A T I O N S

1.- Dispositif d'articulation pour les jambes d'un trépied, selon la revendication 1 du brevet principal, caractérisé en ce que la tirette coudée est remplacée par un levier, monté pivotant sur l'extrémité supérieure des jambes, dont un bras est soumis à l'action d'un ressort, de façon à ce que l'extrémité de l'autre bras agisse sur des butées latérales du support, à la manière d'un encliquetage, le désencliquetage correspondant pouvant se faire par pression ou par traction sur un des deux bras du levier, selon la nature du levier.

2.- Dispositif selon la revendication 1, caractérisé en ce que le trépied comprend un support et trois jambes écartées de 120° tournant autour de trois arbres solidaires de trois oreilles latérales dudit support au moyen de trois chapes d'articulation comprenant chacune deux joues, en ce que ces chapes d'articulation comprennent chacune des moyens de fixation d'un axe sur lequel pivote un levier de première espèce dont un des bras comprend un dispositif pour la fixation d'une terminaison d'un ressort à lame, l'autre terminaison s'appuyant sur la chape d'articulation, en ce que, pour chaque pied, sous l'action du ressort, l'extrémité de l'autre bras du levier vient s'engager contre une butée de l'oreille correspondante, à la manière d'un encliquetage, pour permettre le blocage de l'écartement du pied, le déblocage du pied s'effectuant par une pression convenable exercée sur le bras situé du côté du ressort.

3.- Dispositif selon la revendication 1, caractérisé en ce que le levier est un levier de deuxième espèce ou de troisième espèce, le ressort utilisé étant alors, selon le cas, un ressort de pression ou un ressort de traction.





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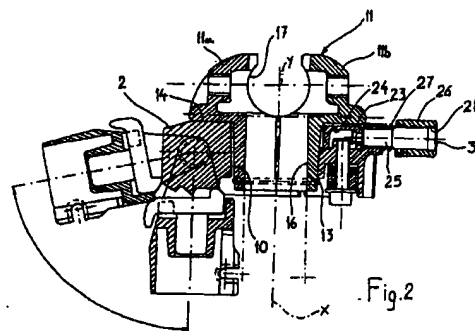
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(54) **An improved tripod, particularly for photographic uses**

(57) The tripod comprises a spider (2) for the articulation of the legs (3) and a support (11) mounted in the spider (2) with a first seat (16) coaxial with the principal axis (x) of the tripod and a second seat (17) with an axis substantially perpendicular to the first seat (16) so that a column (18) of the tripod can be housed alternatively and removably either in the first seat (16) or in the second seat (17).



**EP 0 952 383 A2**

## Description

[0001] The present invention relates to an improved tripod, particularly but not exclusively designed for optical or photographic uses, of the type comprising the characteristics of the preamble to the main claim. The term tripod is used in this context to indicate a support with three or more legs, no limitation being implicitly or explicitly attributable to the terminology adopted with regard to the number of legs.

[0002] It is well known that photographic tripods or stands are used for supporting photographic equipment in a firm and stable manner at a predetermined distance and height relative to the subject to be photographed or filmed.

[0003] A conventional tripod has a column, the position of which is adjustable along a vertical axis (coinciding with the principal axis of the spider) in order correspondingly to vary the position of the photographic equipment. There are, however, certain positions which are not permitted by known tripods or at least which cannot easily be achieved.

[0004] For example, for close-range photography or macro-photography, it is necessary to be very close to the subject to be photographed but, in some cases, the legs of the tripod may interfere with correct positioning. This is due to the fact that, in order to bring the photographic equipment close to the subject to be photographed or filmed, it is necessary to invert the position of the column so that the photographic equipment is disposed between the legs of the tripod a short distance from the ground, but photography is possible only within the area described between the tripod legs and not in the region outside this area.

[0005] The technical problem upon which the present invention is based is that of providing a tripod designed structurally and functionally to overcome all of the disadvantages complained of with reference to the prior art mentioned.

[0006] This problem is solved by the invention by means of a tripod formed in accordance with the following claims.

[0007] The characteristics and advantages of the invention will become clearer from the detailed description of a preferred embodiment thereof described below by way of non-limiting example, with reference to the appended drawings, in which:

Figure 1 is a partially-sectioned, schematic, side elevational view of a tripod formed in accordance with the present invention,

Figure 2 is a section of the detail indicated by the arrow II in Figure 1, on an enlarged scale,

Figure 3 is a plan view of the spider of the tripod of Figure 1,

Figures 4 and 5 are perspective views of a detail of the jaws of the tripod of the invention, from one side and from the other side,

Figures 6 and 7 show the tripod of the previous drawings, in two possible positions.

[0008] In Figure 1, a tripod formed in accordance with the present invention is generally indicated 1 and includes a spider 2 which has a principal axis X and in which three legs, all indicated 3 converge and are articulated on respective pins 4. For clarity, only one of the three legs is shown in detail in Figure 1.

[0009] Each leg 3 is formed, in known manner, with a telescopic structure with two or more extensions 5, 6 the relative positioning of which is adjustable by means of clamps 7. The angular position of each leg 3 about the pin 4 is also adjustable by means of an adjustment device 8.

[0010] In the centre of the spider 2, there is a hole 10 with an approximately cylindrical surface extending coaxially with the axis X. The hole 10 houses a support 11 having a generally clamp-like configuration with two (or more) symmetrical and opposed jaws 11a, 11b.

[0011] The jaws 11a, 11b are restrained axially in the hole 10 in the spider 2 by means of a Sieger ring 13 on one side and a shoulder 14 on the opposite side. A shim ring of anti-wear material (not shown) is preferably interposed between the shoulder 14 and the surface of the spider 2 facing the shoulder.

[0012] A first and a second seat 16, 17 are defined in the jaws 11a, 11b. The first seat 16 is coaxial with the principal axis of the spider X and the second seat 17 extends transversely and has an axis Y perpendicular to the axis X.

[0013] A column 18 can be housed alternatively and removably either in the first seat 16 or in the second seat 17, and is held therein by the tightening of the jaws 11a, 11b onto the column by clamping means 19.

[0014] Of each seat 16, 17, half is formed in one of the jaws 11a, 11b and half is formed in the other jaw, the half seats being shaped as portions of cylindrical surfaces.

[0015] The column 18 is tubular and carries at one of its axial ends an attachment 20, for example, a screw attachment for the fixing thereto of photographic or other user equipment and, at the axially opposite end, an elastomeric cap 21 press-fitted and restrained by appendages 22 which engage in corresponding holes in the column. The cap 21 has the main function of preventing the column from accidentally coming out of the seat 16, 17 in which it is engaged but the cap is removed in order to transfer the column 18 from one of the seats to the other.

[0016] The support 11 is mounted in the spider 2 so as to be rotatable about the principal axis X when the clamping means 19 are slackened. The clamping means also serve for locking the rotation of the support and of the column held therein.

[0017] The aforementioned clamping means comprise a block 23 which can be slid to a limited extent in a recess 24 of the spider 2 by means of a screw 25 with a

take-up crank 26, that is, a crank urged by a spring 27 to engage a key 30 of the screw 25 in a polygonal seat 28 of the crank. The block 23 is guided in a substantially radial direction relative to the column and, on the opposite side to the screw 25, has two projections 31 for defining two circumferentially-spaced points of contact with the jaws 11a, 11b of the support. Diametrically opposite the block 23, the hole 10 has an axial groove 33 the edges of which define a further two contact points 32 for the jaws opposite the block 23 so that, for any annular position of the jaws about the principal axis X, a load directed radially towards the column 18 is produced between the jaws of the spider as a result of the radial clamping of the block against at least one of the jaws.

[0018] By virtue of the structure just described, the tripod 1 can support photographic equipment 40 mounted on the attachment 20 either with the column 18 housed in the first seat 16 of the support 11 or with the column 18 mounted at right angles to the previous position in the seat 17. In this position, it is possible, for example, to achieve positions of the photographic equipment very close to the subject without the tripod legs interfering with the immediately surrounding area.

[0019] In order to move the column from one of the two positions to the other, it suffices to remove the cap 21, to slacken the clamping means 19, to take the column out of one seat, and to insert it in the other. When this has been done, the means 19 are re-tightened and the cap is replaced on the end of the column 18.

#### Claims

1. An improved tripod comprising a spider (2) having a principal axis (x), at least three legs (3) converging in the spider (2) and articulated thereto, a support (11) in the spider with a first seat (16) coaxial with the principal axis (x), and a column mounted in the first seat (16) coaxially with the principal axis, characterized in that the support (11) comprises a second seat (17) with an axis (y) substantially perpendicular to the first seat (16), the column (18) being housed alternatively and removably either in the first seat (16) or in the second seat (17).
2. A tripod according to Claim 1, in which the support (11) has a clamp-like configuration with at least two jaws (11a,b) restrained axially in the spider (2), and clamping means are provided between the spider (2) and the support (11) for clamping the jaws onto the column (18).
3. A tripod according to Claim 2, in which, of each seat (16,17), half is formed in one of the jaws and half is formed in the other jaw.
4. A tripod according to Claim 2 or Claim 3, in which the support (11) is mounted for rotating about the principal axis (x) in the spider (2).

5. A tripod according to Claim 4, in which means are interposed between the support (11) and the spider for locking the rotation of the support (11) about the principal axis (x).
6. A tripod according to one or more of Claims 2 to 5, in which the means for locking the rotation of the support (11) are incorporated in the means for clamping the jaws (11a,b).
7. A tripod according to Claim 6, in which the clamping means comprise a block (23) movable in the spider (2) in a substantially radial direction and having two circumferentially-spaced points of contact (31) with the jaws of the support, the spider (2) defining, on the side diametrically opposite the block (23), a further two contact points (32) for the jaws (11a,b), opposite of the block (23), so that, for any angular position of the jaws about the principal axis, a radial load is produced between the jaws of the spider as a result of the radial tightening of the block (23) against at least one of the jaws (11a,b).



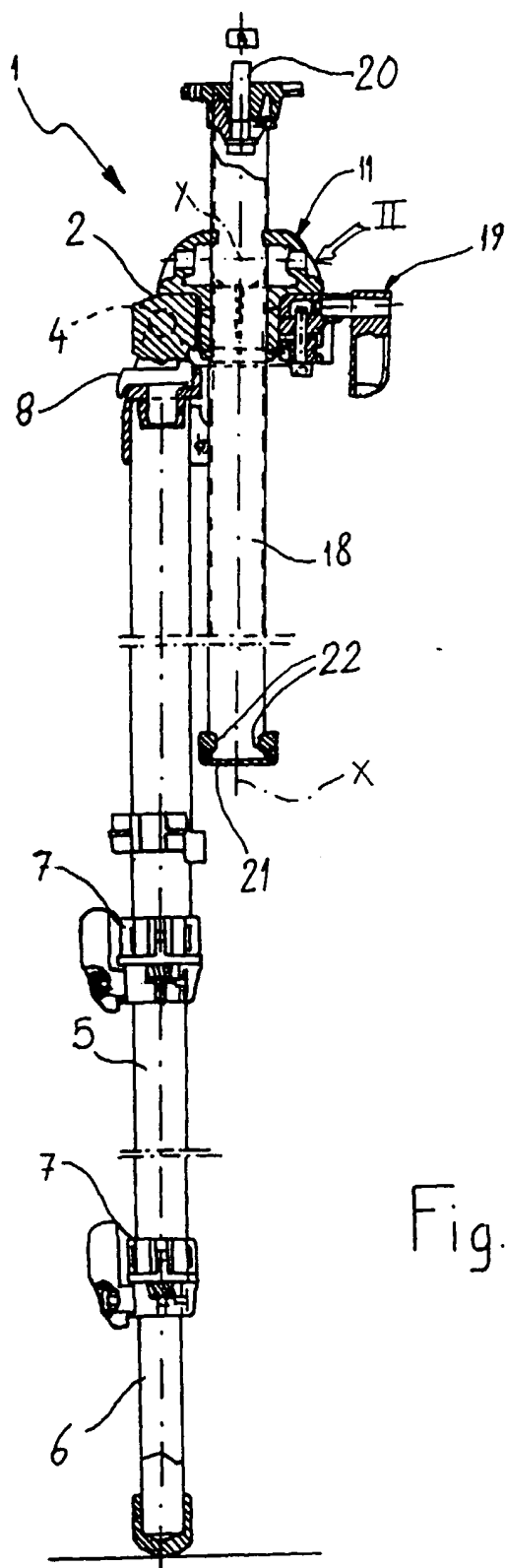
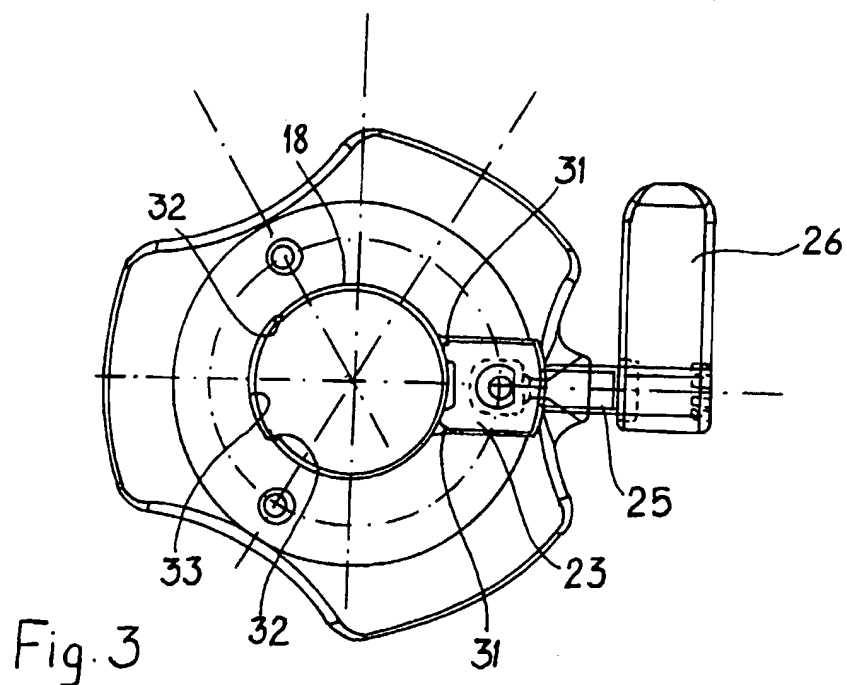
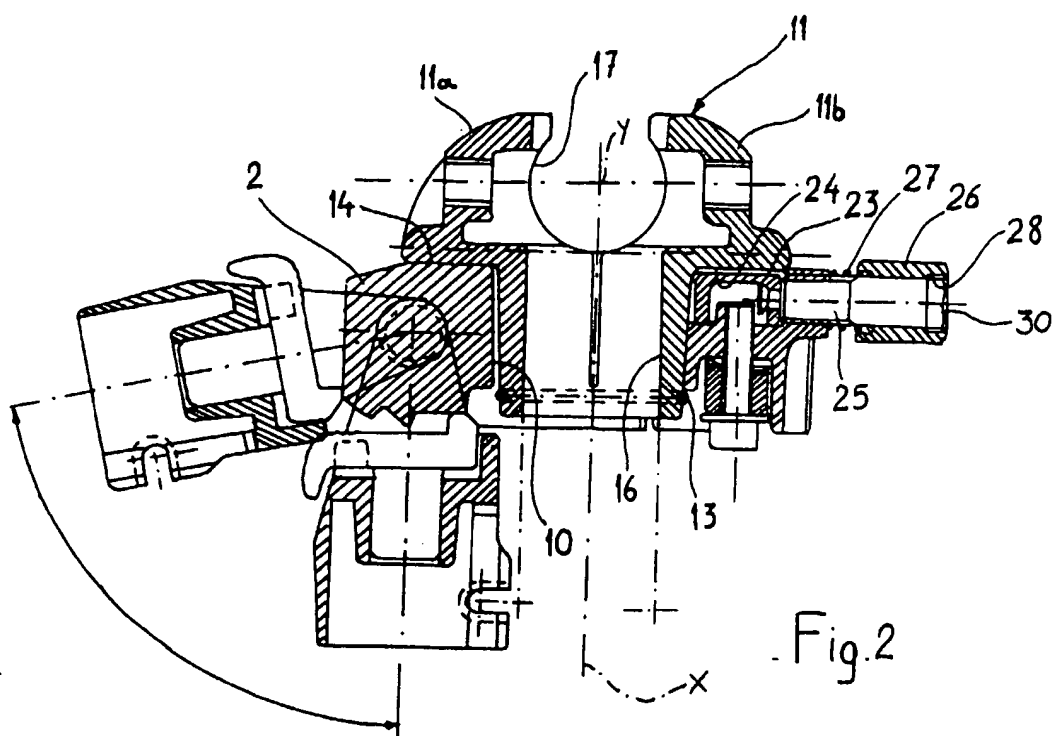
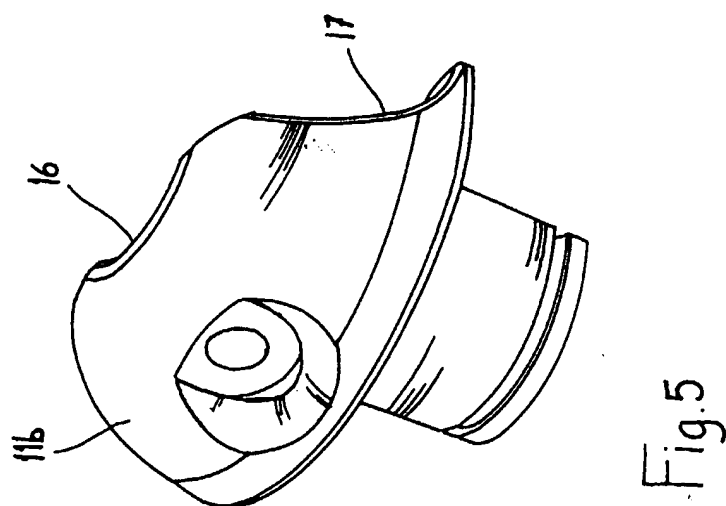
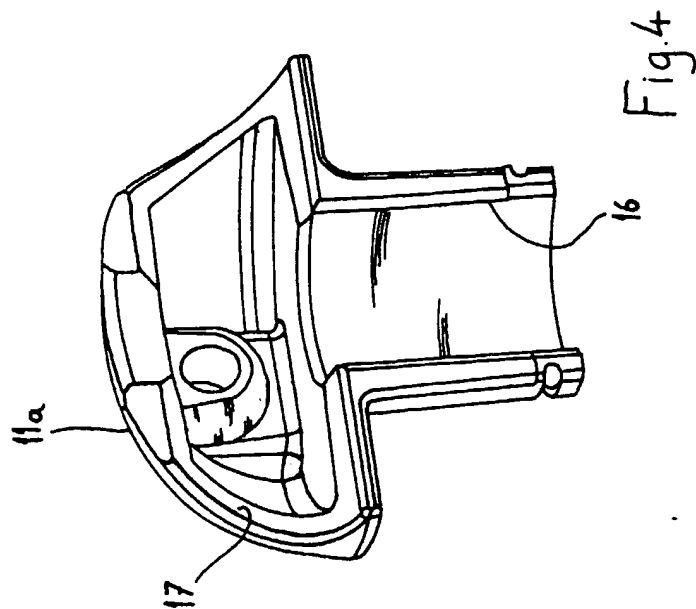


Fig. 1





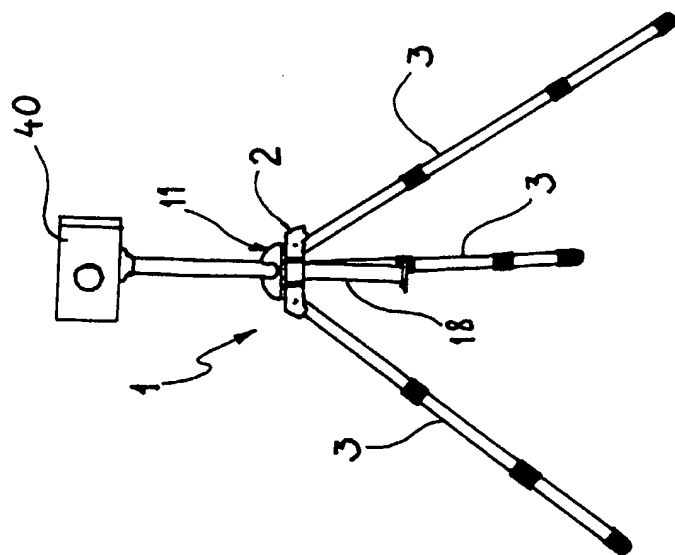


Fig. 6

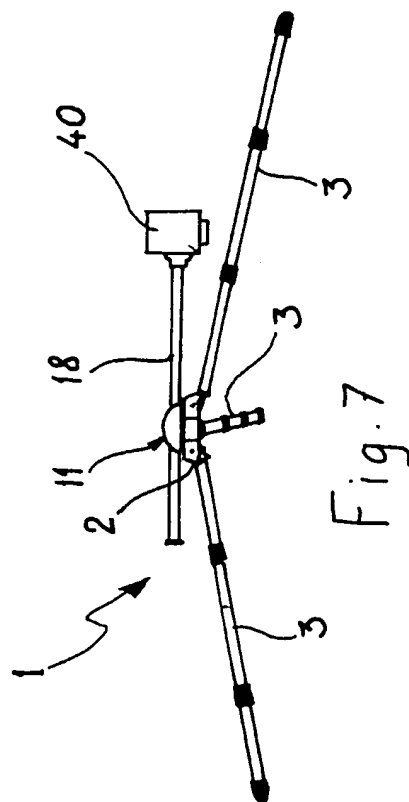
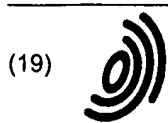


Fig. 7



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(72) Inventor: **Battocchio, Gilberto**  
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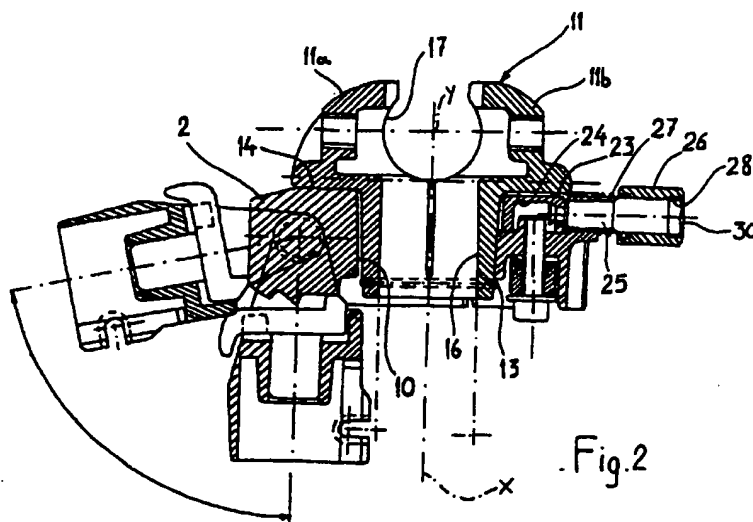
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(71) Applicant:  
**LINO MANFROTTO + CO. S.p.A.**  
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(54) **An improved tripod, particularly for photographic uses**

(57) The tripod comprises a spider (2) for the articulation of the legs (3) and a support (11) mounted in the spider (2) with a first seat (16) coaxial with the principal axis (x) of the tripod and a second seat (17) with an axis substantially perpendicular to the first seat (16) so that

a column (18) of the tripod can be housed alternatively and removably either in the first seat (16) or in the second seat (17).



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# EUROPEAN SEARCH REPORT

Application Number  
EP 98 20 3746

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB 168 177 A (MCLELLAN) * page 1, line 51 - line 68; figure 1 *	1	F16M11/32 F16M11/02
A	FR 1 432 624 A (LAFFINEUR) 8 June 1966 (1966-06-08)		
A	US 5 632 459 A (BRETT) 27 May 1997 (1997-05-27)		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F16M
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 September 2000	Examiner Baron, C
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 98 20 3746

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20-09-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 168177 A		NONE	
FR 1432624 A	08-06-1966	NONE	
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		CA 2141185 A	03-02-1994
		EP 0656106 A	07-06-1995
		WO 9402774 A	03-02-1994
		JP 8506645 T	16-07-1996

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# BREVET D'INVENTION

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PUBLICATION

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⑤① Classification internationale (Int. Cl.) F 16 m 11/00.

⑦① Déposant : PFLIEGER Roger, résidant en France.

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⑦④ Mandataire : Cabinet Brot, 83, rue d'Amsterdam, Paris (8).

⑤④ Dispositif d'articulation pour les jambes d'un trépied.

⑦② Invention de :

③③ ③② ③① Priorité conventionnelle :

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L'invention concerne un dispositif d'articulation pour les jambes d'un trépied.

L'invention a pour objet de permettre aux jambes du trépied de prendre, outre les deux positions habituelles de transport et  
5 de travail, deux autres positions de travail.

Succinctement, le dispositif d'articulation selon l'invention est caractérisé par la coopération, pour chaque jambe, d'une tirette coulissant manuellement et de deux butées latérales du support.

L'invention sera décrite en se référant aux figures suivantes,  
10 données à titre d'exemples non limitatifs :

La figure 1 est une coupe partielle, passant par l'axe d'une jambe et par l'axe de symétrie ternaire du support, d'un trépied selon l'invention ;

La figure 2 est un détail, montrant, en perspective, la tirette  
15 de la figure 1 ;

Les figures 3, 4, 5, 6, sont des perspectives schématiques du trépied de la figure 1, respectivement en la position de transport et en les trois positions de travail.

Avec référence à la figure 1 : le trépied comprend, de façon  
20 classique, un support 1, d'axe ternaire XX, avec un perçage central 2 fileté pour la fixation de l'appareil à monter sur le trépied, et trois jambes, écartées de 120° autour de l'axe XX, dont une seule, 3, est représentée, tournant autour d'un arbre 4 du support, perpendiculaire à l'axe XX, au moyen d'une chape à deux joues  
25 5. Selon l'invention, une tirette coudée 11 (figures 1 et 2), munie d'un bouton moleté 12, peut coulisser manuellement, par une ouverture allongée 13, autour d'une vis 14 et entre les deux joues de la chape 5 qui la guident ; ce coulisserment est assuré, avec un léger frottement, par une rondelle mince 15 serrée sous la tête de  
30 la vis 14 sur les côtés de la chape 5 ; le support 1 est muni, pour chaque jambe telle que 3, de deux butées latérales 16 et 17.

Avec référence aux figures 1 et 3 : dans la position de transport (tracé en trait plein de la figure 1), les trois jambes 3 sont repliées l'une vers les autres, les tirettes 11 peuvent être ren-  
35 trées à fond.

Avec référence aux figures 1 et 4 : dans la position normale de travail (tracé N en trait mixte de la figure 1), chaque tirette 11 est légèrement sortie, et en ouvrant chaque jambe 3 sa tirette 11 vient en butée par son bout coudé sous sa butée inférieure 16  
40 du support 1.

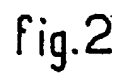
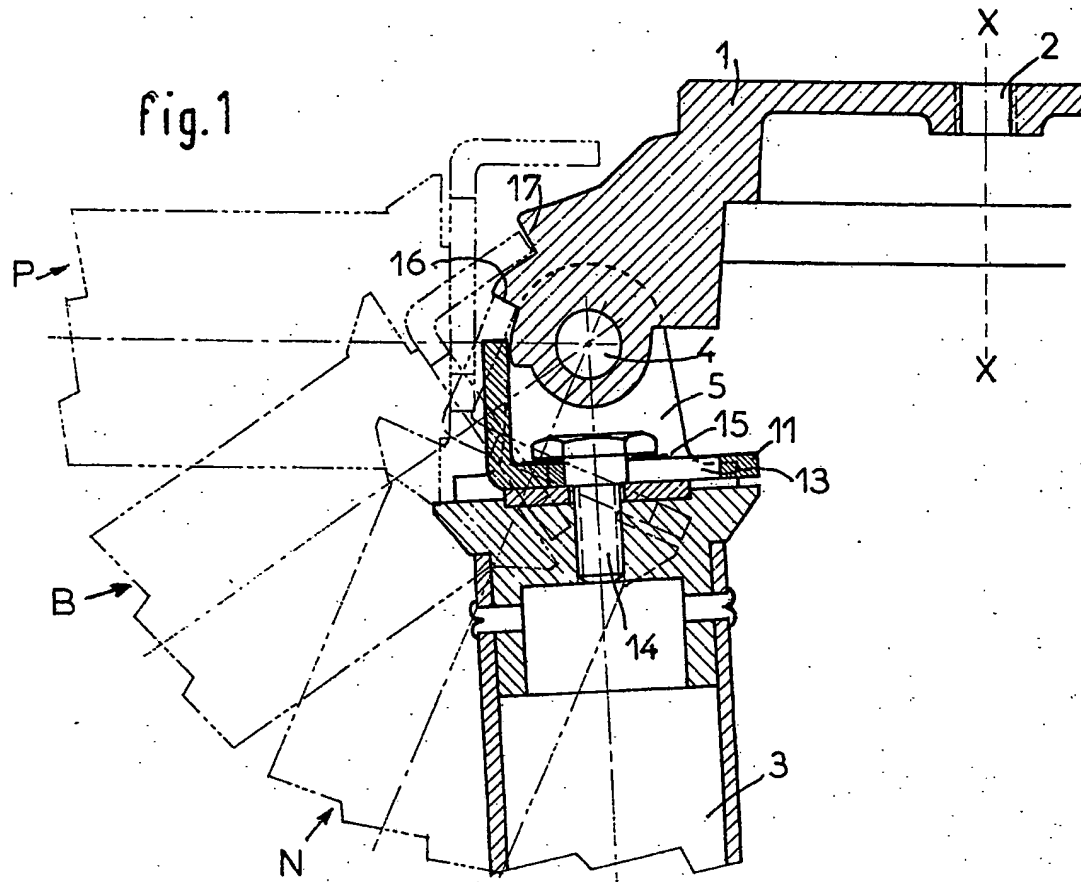
Avec référence aux figures 1 et 5 : dans la position basse de travail (tracé B en trait mixte de la figure 1), chaque tirette 11 est davantage sortie, et en ouvrant chaque jambe 3 sa tirette 11 vient en butée par son bout coudé sous sa butée supérieure 17 du support 1.

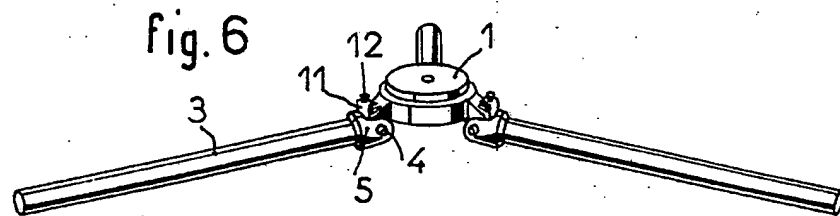
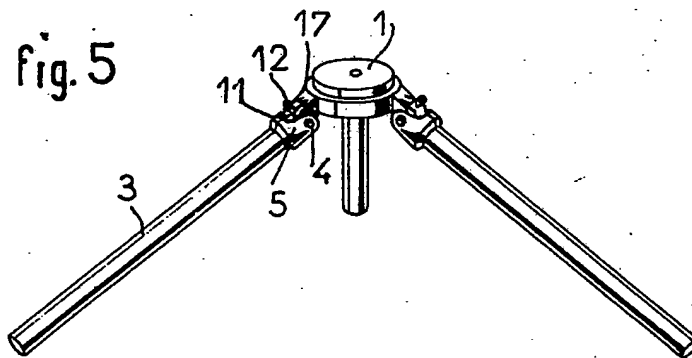
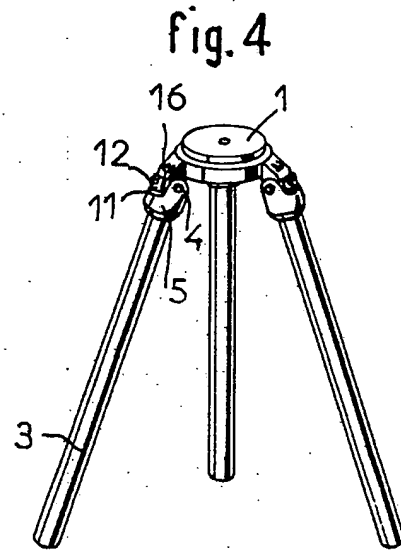
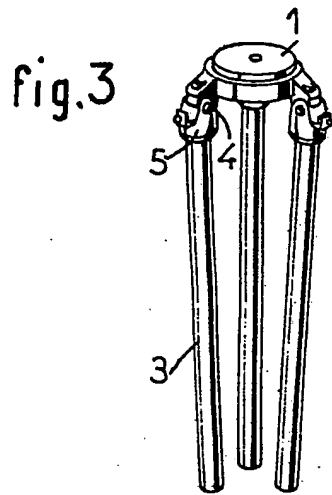
Avec référence aux figures 1 et 6 : dans la position ultra basse de travail (tracé P en trait mixte de la figure 1), chaque tirette 11 est sortie à fond, et on peut ouvrir chaque jambe 3 jusqu'à l'horizontale.

Bien entendu, l'invention supporte des modifications évidentes pour l'homme de l'art, par exemple les butées latérales pour chaque jambe peuvent être uniques, ou triples, etc...

## R E V E N D I C A T I O N S

- 1.- Dispositif d'articulation pour les jambes d'un trépied, caractérisé par la coopération, pour chaque jambe, d'une tirette coudée coulissant manuellement et de butées, par exemple deux butées, latérales du support.
- 5
- 2.- Dispositif selon la revendication 1, caractérisé en ce que la tirette coulisse, par une ouverture allongée, autour du corps d'une vis de la jambe, avec guidage par les joues de la chape de pivotement de la jambe sur le support, et de préférence
- 10 avec frottement sous une rondelle mince serrée par la tête de ladite vis sur les côtés de ladite chape.







CONFÉDÉRATION SUISSE

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## EXPOSÉ D'INVENTION

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Emile Fornerod, Saint-Sulpice (Vaud), est mentionné comme étant l'inventeur

## BREVET PRINCIPAL

Georges Tecoz, Belmont-sur-Lausanne

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## Trépied pliant

La présente invention a pour objet un trépied pliant, caractérisé en ce qu'il comprend un tube-support vertical sur la périphérie duquel sont fixées trois paires équidistantes de flasques 5 verticaux, chacune des paires de flasques formant les branches d'une chape à laquelle est articulée, au moyen d'un pivot, l'extrémité supérieure de l'une des jambes du trépied, et une bague coulissant sur le tube-support et présentant du côté inférieur trois becs dont chacun 10 pénètre entre les branches respectives de l'une des chapes pour servir de butée à l'extrémité supérieure de la jambe correspondante, le tout étant agencé de façon qu'après avoir soulevé la 15 bague pour dégager les becs hors des chapes, puis fait pivoter les jambes autour de leur axe d'articulation respectif pour les ramener parallèlement au tube-support et après avoir replacé la bague dans sa position initiale, le trépied replié est prêt à être transporté.

Le dessin annexé représente, à titre d'exemple, une forme d'exécution du trépied pliant, objet de l'invention.

Les fig. 1 à 3 sont des vues du trépied en 25 position dépliée, dont la fig. 1 est une coupe verticale d'une partie du tube avec la bague coulissante et un pied déployé; la fig. 2, une coupe en plan, suivant la ligne brisée II-II de la fig. 1, et la fig. 3, une coupe transversale, 30 suivant la ligne III-III de la fig. 1.

La fig. 4 est une vue d'un détail du tube-support.

La fig. 5 est une vue en plan de la fig. 4.

La fig. 6 est une vue de détail de la bague coulissante.

La fig. 7 est une vue en plan de la fig. 6.

La fig. 8 est une vue partielle en élévation du trépied en position repliée.

Dans la forme d'exécution représentée, le trépied pliant comprend un tube-support 1 à 40 la périphérie duquel sont fixées, par exemple par soudure, trois paires équidistantes de flasques, telles que les flasques 2, 2', formant les branches d'une chape 3 (fig. 4 et 5). Les trois chapes 3, 4 et 5 sont, chacune, pourvues d'un 45 pivot 6 (fig. 1 à 3), constitué par un boulon, sur lequel est articulée une jambe 7 du trépied.

Sur la périphérie du tube-support 1 est montée une bague 8 coulissant le long dudit tube. La bague 8 présente du côté inférieur trois 50 becs 9, 9' et 9'' (fig. 6 et 7), destinés à pénétrer dans les chapes 3, 4 et 5 respectivement, et reliés entre eux à leur partie supérieure, par exemple par soudure, par des entretoises 10, 10' et 10'' respectivement, en forme d'arcs de 55 cercle. Lorsque le trépied est déplié, les becs 9, 9' et 9'' servent de butée aux jambes 7 dont les extrémités supérieures sont taillées en biseau, comme représenté à la fig. 1.

Pour replier le trépied en vue de son transport, la bague 8 est soulevée en la faisant glisser le long du tube 1 jusqu'à ce que les becs soient dégagés des chapes. Puis on fait pivoter les jambes 7 dans la direction indiquée par la flèche *f* de la fig. 1, jusqu'à ce qu'elles occupent une position parallèle au tube, comme représenté à la fig. 8, la bague étant abaissée dans sa position initiale.

10 Le trépied pliant est destiné à recevoir de multiples applications. Sur le tube-support peut être monté, par exemple, un dispositif de signalisation, tel qu'une lampe, un disque ou une table pliante. Il peut servir également de support de mire, de lunette, d'appareil de géodésie ou autres instruments portatifs semblables.

#### REVENDICATION :

Trépied pliant, caractérisé en ce qu'il comprend un tube-support vertical sur la périphérie duquel sont fixées trois paires équidistantes de flasques verticaux, chacune des paires de flas-

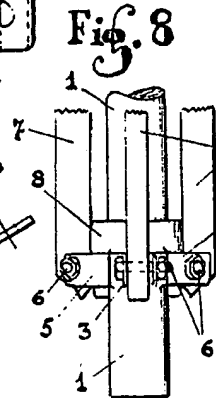
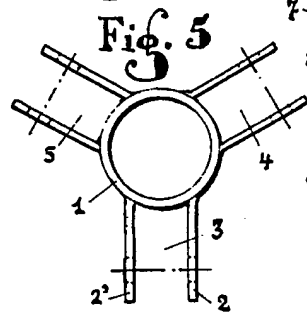
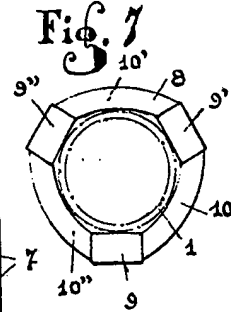
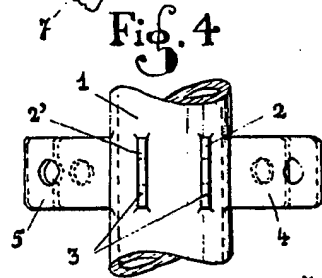
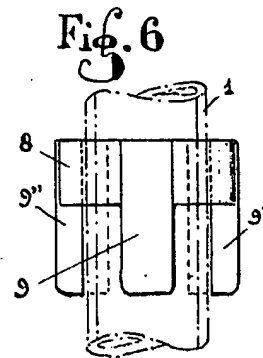
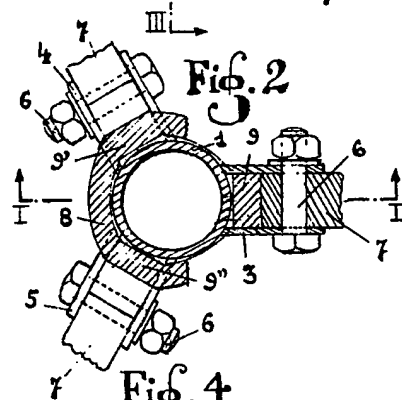
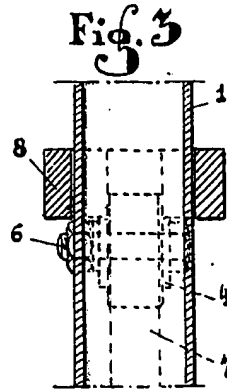
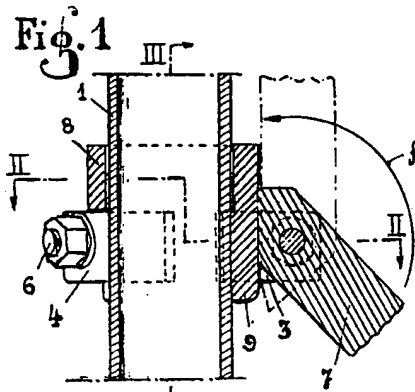
ques formant les branches d'une chape à laquelle est articulée, au moyen d'un pivot, l'extrémité supérieure de l'une des jambes du trépied, et une bague couissant sur le tube-support et présentant du côté inférieur trois becs dont chacun pénètre entre les branches respectives de l'une des chapes pour servir de butée à l'extrémité supérieure de la jambe correspondante, le tout étant agencé de façon qu'après avoir soulevé la bague pour dégager les becs hors des chapes, puis fait pivoter les jambes autour de leur axe d'articulation respectif pour les ramener parallèlement au tube-support et après avoir replacé la bague dans sa position initiale, le trépied replié est prêt à être transporté.

#### SOUS-REVENDICATION :

Trépied selon la revendication, caractérisé en ce que les trois becs de la bague couissante sont reliés entre eux à leur partie supérieure par des entretoises en forme d'arcs de cercle.

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Mandataire : A. R. Flesch, Lausanne







## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/AU98/00454 (22) International Filing Date: 12 June 1998 (12.06.98) (30) Priority Data: PO7275 12 June 1997 (12.06.97) AU (71) Applicant (for all designated States except US): TRITON TECHNOLOGIES PTY. LTD. [AU/AU]; 14-18 Mills Street, Cheltenham, VIC 3192 (AU). (72) Inventors; and (75) Inventors/Applicants (for US only): LEWIN, George [AU/AU]; 14-18 Mills Street, Cheltenham, VIC 3192 (AU). SZOMMER, Harry [AU/AU]; 14-18 Mills Street, Cheltenham, VIC 3192 (AU). CHRISTIANSEN, Ian [AU/AU]; 14-18 Mills Street, Cheltenham, VIC 3192 (AU). BROWN, Warren [AU/AU]; 14-18 Mills Street, Cheltenham, VIC 3192 (AU). (74) Agent: CARTER SMITH &amp; BEADLE; 2 Railway Parade, P.O. Box 557, Camberwell VIC 3124 (AU).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  Published With international search report.</p>	
<p>(54) Title: A MULTIPURPOSE SUPPORT STAND</p> <p>(57) Abstract</p> <p>A support stand having a base (4), a stand body (3) and a height adjustable headpiece (2). Preferably the headpiece includes a base section (21) and two side sections (22, 23) extending from said base section (21) to form a substantially U-shaped channel (24) for receiving a work piece, at least one of said sections being provided with an adjustable head clamp member (26) for clamping said work piece when in the substantially U-shaped channel (24).</p>		

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## A MULTIPURPOSE SUPPORT STAND

### FIELD OF THE INVENTION

This invention relates to a support stand for a variety of uses which is particularly suited to wood working in the home workshop and by tradesmen as well as  
5 domestic and recreational uses.

### BACKGROUND OF THE INVENTION

The applicant believes there are many professional, domestic and recreational situations where a portable height adjustable stand can find application. One domestic application for a portable height adjustable stand includes situations  
10 where a sole person performing a task where a work piece must be firmly held in position while performing some other operation involving a tool in the other hand. An example of such a situation is when a tradesman is hanging a door or fitting hinges to a door, a job normally requiring two hands to hold the door in position while attaching the screws or forming a rebate with the other.

15 There are other domestic and recreational situations where a support stand would be useful such as a base for a temporary work table, a support prop, or a pole mounting a spotlight, a microphone, a loudspeaker etc.

One particular professional and domestic workshop situation is as a replacement for a conventional roller support stand. A roller support stand is used to support a  
20 work piece while permitting the work piece to move in the direction of travel of the roller. Typically a roller support stand can be used for in-feed and/or out-feed support of long work pieces passed through a rip saw bench, spindle molder or thicknesser. Other workshop applications include outboard support when handling wide sheets on a saw bench, or static support of the work piece and/or off-cut on

one or both sides of a docking saw.

In all of these workshop applications, although a roller stand is the traditionally employed device, characteristics of the roller stand make it less than ideal for each of these uses. For example, a conventional roller stand is unable to clamp and retain auxiliary guides. More importantly a work piece moving over the roller is difficult to control due to the lack of friction between the work piece and the roller and due to the tendency of the roller stand to steer the work piece unless the roller is set up exactly perpendicular to the direction of travel of the work piece.

## **OBJECT AND SUMMARY OF THE INVENTION**

10 It is an object of the present invention to provide a support stand which is preferably portable and finds application in at least one of the above situations.

Accordingly the invention provides a support stand having a base, a stand body and a headpiece. In one preferred form, the headpiece includes a base section and two side sections extending from the base section to form a substantially U-shaped channel for receiving a work piece, at least one of the side sections being provided with an adjustable head clamp member for clamping said work piece when in the substantially U-shaped channel. "Work piece" may include lengths of wood or lengths of metal tubing supporting selected objects, or may include a cleat attached to an object which is desired to be clamped to the stand.

20 It is preferable that the head clamp member is provided with an adjustment mechanism for advancing the head clamp member towards the work piece when in the channel. At least the side of the substantially U-shaped channel opposite the clamp surface is provided with ridges or barbs extending into the U-shaped channel. These ridges or barbs enhance securing of the work piece when in the channel by adjustment of the clamp member.

25

The side of the substantially U-shaped channel may be provided with upper flange surfaces. The upper flange surfaces may be provided with skid surfaces, having a low coefficient of friction. By providing upper flange surfaces with a skid surface on the headpiece, the support stand is able to function in a similar fashion to the previously mentioned roller support stands. Thus, if the invention is used in this application, the skid surface will allow the work piece to move smoothly over the stand without any tendency to steer the work piece as in the case of a mis-aligned roller support stand. As well, the frictional drag is much more controllable using a skid surface, eliminating unwanted movement of the work piece and the off-cut.

- 10 In another preferred form of the invention, the headpiece of the stand support is provided with a pivotal mounting for mounting the head to the stand body. The headpiece may be pivotal relative to the stand body, between a position substantially perpendicular with the stand body, to a position substantially parallel with the stand body. Thus, the pivotal movement of the headpiece relative to the stand body, is approximately 90°.

The preferred pivotal movement is provided by a pivotal mounting having a quadrant clamp secured to the substantially U-shaped channel. The quadrant clamp may include two clamp members which are positioned either side of the stand body, each having a quadrant guide track formed therein. An adjustment rod extends through the body and is located in the aligned quadrant guide tracks of the respective quadrant members. The adjustment rod has a tensioning device which, when applied, fixes the position of the rod in the guide tracks, thereby securing the position of the U-shaped channel relative to the body.

The quadrant clamp may further include a fulcrum rod which extends through the stand body and about which the clamp members pivot relative to the stand body. Saddle members may be provided to bear against the body and provide a frictional surface on the body side of the clamp members, the adjustable rod and fulcrum rod

extending through respective saddle members and the stand body.

The stand body more preferably takes the form of an elongate shaft. Saddle members associated with one clamp member are provided with arms which extend around said shaft to cooperate with saddle members associated with the other of  
5 said clamp members.

The quadrant clamp further includes outer quadrants having guide tracks corresponding to the guide tracks in the respective clamp members. The outer quadrants are locked to and rotatable with the quadrant members. Between the outer quadrant and respective quadrant members, spacers are preferably provided  
10 having surfaces contacting the clamp member and corresponding outer quadrant. These spacers provide additional clamping surfaces thus multiplying the locking force when the tensioning device is applied.

In another aspect of the invention, the adjustable stand body is received within the base mounting which in turn is provided with a variable fixing device to allow the  
15 height of the headpiece to be adjusted and secured relative to the base and in any axial orientation in relation to the base, further enhancing the utility and ease of adjustment. The variable fixing device may include a bush assembly having a collar for receiving the stand body, the collar having a fixed end and a variable end. The fixed and variable ends of the collar extend through the bush assembly and  
20 the fixed end of the collar is secured to a clamp base. The collar extends around the stand body from the fixed end and the variable end of the collar is adjustably received within the clamp base for tensioning the collar against the stand body. The variable end may extend through the clamp base and be connected to a tensioning device for tightening and loosening the collar.

25 Thus, applying tension to one end of the clamping collar causes the stand body to be clamped against one wall of the bush assembly. This variable fixing device is

able to provide a substantially increased clamping force compared to the tension applied by the threaded knob. Furthermore, the uniform contact of the collar minimizes surface damage to the stand body, and allows to a very significant extent a progressive or gradual release of the clamping force applied, thus preventing the stand and its supported load plummeting down-wards when the clamp is released.

In another preferred feature of the invention, the base includes at least three legs for supporting the stand body and headpiece. The legs may be pivotally received within a housing which permits only limited upward pivotal movement of the legs relative to the housing. This may be affected by the housing having a limiting edge spaced from the pivotal mounting of the leg within the housing preventing upward rotation of the leg beyond the limiting edge. A foot may be formed on each leg, having a means for securing the support stand to a supporting surface.

The support stand in accordance with the broadest aspect of the invention is able to fulfill the requirements of securely holding difficult shaped objects in position thereby freeing the hands of the operator. With the addition of the preferred features such as the skid surface, the support stand is able to perform any of the other applications envisaged by the applicant such as providing a superior replacement for a conventional roller support stand in workshop applications.

The features, objects and advantages of the present invention will become more apparent from the following description of the preferred embodiment and accompanying drawings in which:

Figure 1 is a elevational view of an embodiment of a support stand in accordance with the invention;

Figure 2 is a sectional view through line A-A of Figure 1;

Figure 3 is a sectional view through line B-B of Figure 1; and

Figure 4 is an in-line for assembly drawing of the headpiece of the embodiment of the invention shown in Figure 1.

Referring to Figure 1, a portable and collapsible support stand 1 is shown, having a  
5 headpiece 2, a stand body 3 and a support base 4. The headpiece includes a section  
for receiving a work piece including a base 21 and sides 22, 23 to form a  
substantially U-shaped channel 24. At least one of the sides 23 is provided with an  
adjustable clamp member 26 which is adjustable by an adjustment mechanism 25  
towards the other of the sides 22 of the U-shaped channel 24. The clamp member  
10 is preferably a pair of clamp arms extending through the side 23 of the U-shaped  
channel 24.

The adjustment mechanism may include a threaded knob 27 connected to a bolt 28  
received in the side 23 such that tightening of the threaded knob 27 drives the  
clamp piece 26 towards the side 22 of the U-shaped channel. Turning the threaded  
15 knob 27 in the opposite direction enables compression spring 29 to move the clamp  
piece 26 away from side 22. The opposite side of the U-shaped channel 24 may be  
provided with ridges or barbs 60 to assist in securing the work piece in the channel.

The substantially U-shaped channel may be provided with upper flange surfaces  
30, 31 which in turn are provided with skid surfaces 32, 33 respectively. The skid  
20 surfaces are produced from a material having a coefficient of friction sufficiently  
low to enable a work piece to slide across the top of the skid surfaces without  
sufficient resistance to topple the support stand.

The substantially U-shaped channel may be mounted by bolts 34 to a quadrant  
clamp 35 to enable pivotal movement of the U-shaped channel 24 relative to the  
25 stand body 3. The quadrant clamp includes clamp members 36 and 37 positioned



either side of the stand body 3. The clamp members each have a quadrant guide track 38 formed therein. As best seen in Figure 2, there is also provided an outer quadrant 39 spaced from the body of the clamp member 37 by a spacer shown as a washer 40, 40a. The quadrant clamp further includes an adjustment rod 41 which  
5 extends through the stand body 3 and through the aligned quadrant guide tracks 38 of the respective quadrant members 36, 37.

The outer quadrants 39 and 39a are able to rotate with clamp members 36, 37 with respect to the adjustment rod 41. The spacers positioned between the clamp members 36, 37 and outer quadrants 39, 39a are retained in position relative to the  
10 adjustment rod and provide additional frictional locking surfaces which contact the inner surface of outer quadrants 39, 39a and the outer surfaces of clamp members 37, 36 respectively.

The adjustment rod 41 is provided with a tensioning device such as a threaded knob 42 for tightening and loosening the tension in the adjustment rod 41. A  
15 further spacer 57, 58 may be provided to spread the locking force over a broader area of the outer surfaces of outer quadrants 39, 39a respectively. A fulcrum rod 43 is provided extending through stand body 3. The pivotal movement of the clamp members relative to the stand body is provided about fulcrum rod 43. When adjustment rod 41 is substantially un-tensioned, the quadrant clamp 35 may be  
20 pivoted about fulcrum rod 43 into the desired position and alignment for the substantially U-shaped channel 24. Once in this position the tensioning device 42 is tightened to tension the adjustment rod 41 and thereby secure the position of the U-shaped channel 24 relative to the stand body 3. Because of the length of travel of the adjustment rod 41 in quadrant track 38, the U-shaped channel is able to pivot  
25 through a range from substantially parallel to the stand body to a position which is substantially perpendicular to the stand body.

Saddle members 44, 45 are provided respectively for the adjustment rod 41 and the

fulcrum rod 43 which extend there through and in the case of saddle members 44 and 45, provide a flat locking surface for the inner surfaces of the clamp members 36, 37. When the adjustment rod 41 and the fulcrum rod 43 are fully tensioned the arms of saddle members 44, 45 meet with the arms of corresponding saddle member on the other side of the stand body 3 to provide a fixed and flat mounting relative to the stand body 3. The clamp members 36, 37 are able to rotate about fulcrum rod 43 relative to the saddle members 44, 45.

When tensioning device 42 is tightened, clamp members 36, 37, outer quadrants 39, 39a, spacers 40, 40a, 57 and 58 and saddle members 44 are all tightly clamped together. The applicant has found that by having a number of cooperating clamping surfaces along adjustment rod 41, the quadrant clamp is able to secure the position of the headpiece relative to the body by a hand tightenable tensioning device.

The stand body 3 which is preferably an elongate tubular shaft is received within a mounting 46 of base 4. The mounting 46 is provided with a variable fixing mechanism which includes bush assembly 59 with collar 47 therein. The collar 47 has a fixed end 48 and a variable end 49 extending through the bush assembly 59 and the fixed end 48 of collar 47 is secured to clamp base 50. When the shaft of stand body 3 is received within the base mounting, collar 47 extends around the stand body 3 with variable end 49 being adjustably received within clamp base 50. Variable end 49 of collar 47 may extend through the clamp base 50 to a collar tensioning device 51 for tightening and loosening the collar 47.

When tension is applied to the variable end 49 of collar 47, the shaft of stand body 3 is clamped against one wall of bush assembly 59 under the action of collar 47. Not only does this substantially increase the clamping force but the increase is obtained without any surface damage to the stand body.

Once the stand body 3 is received within the collar 47 and the height of headpiece 2 appropriately adjusted, collar tensioning device 51 is tightened to secure the relative position of the stand body 3 and the base mounting 46. The variable fixing mechanism in accordance with this preferred form allows gradual clamping and progressive release as well as a strong clamp which does not damage the stand body.

Base 4 may be provided with at least three support legs 52 preferably pivotally mounted within housing 53. Housing 53 may be provided with a limiting edge 54 spaced from the pivotal mounting 55 of the leg 52 to the housing 53. Thus upward rotation of the leg 52 relative to the housing 53 will not be possible beyond the limiting edge 54 and the weight of the support stand 1 and the supported work piece will thus lock the relative position of the legs in the base.

Each leg 52 may be provided with a foot 56 having a means such as a hole 57 formed therein to allow securement of the feet of the support stand to a supporting surface or to the ground.

The embodiment of the invention is able to provide a portable, height adjustable, support stand which is able to securely hold articles in position giving an operator two free hands to perform various tasks. The stand is also able to more than adequately replace a roller support stand in a workshop environment.

**CLAIMS**

1. A support stand having a base, a stand body and a headpiece, said headpiece including a base section and two side sections extending from said base section to form a substantially U-shaped channel for receiving a work piece, at least one of said side sections being provided with an adjustable head clamp member for clamping said work piece when in the substantially U-shaped channel.
2. The support stand according to Claim 1 wherein the head clamp member is provided with an adjustment mechanism for advancing said clamp member towards the opposite side section of said substantially U-shaped channel.
3. The support stand according to Claim 2 wherein the side of the substantially U-shaped channel opposite the head clamp member is provided with ridges or barbs extending into the U-shaped channel to enhance securing of said work piece in said channel.
4. The support stand according to any one of claims 1-3 wherein the sides of the substantially U-shaped channel are provided with upper flange surfaces, said upper flange surfaces having at least one skid surface.
5. The support stand according to Claim 1 wherein the headpiece is provided with a pivotal mounting for mounting said head to said stand body.
6. The support stand of Claim 5 wherein the headpiece is pivotal relative to said stand body between a position substantially perpendicular to said body to a position substantially parallel to said body.
7. The support stand according to Claim 5 or 6 wherein the pivotal mounting includes a quadrant clamp secured to said substantially U-shaped channel.

8. The support stand according to Claim 7 wherein the quadrant clamp includes two clamp members positioned either side of said stand body, said quadrant members each having a quadrant guide track formed therein.
9. The support stand according to Claim 8 wherein the quadrant clamp further includes an adjustment rod extending through said stand body and aligned quadrant guide tracks of the respective quadrant members, the position of said rod in said guide tracks being securable to fix the position of said U-shaped channel relative to said stand body.
10. The support stand according to Claim 9 wherein the quadrant clamp further includes a fulcrum rod extending through said clamp members and said body, said clamp members pivoting about said fulcrum rod.
11. The support stand according to any one of Claims 8, 9 or 10 wherein the quadrant clamp further includes saddle members for providing a fixed and flat mounting to said stand body and locking surfaces for respective clamp members.
12. The support stand according to Claim 11 wherein the adjustment rod and fulcrum rod extend through respective saddle members and said body.
13. The support stand according to Claim 12 wherein the saddle members have arms extending around said stand body, the saddle members of one clamp member cooperating with saddle members associated with the other clamp member to secure the headpiece to the stand body.
14. The support stand according to claim 13 wherein the quadrant clamp further includes outer quadrants having guide tracks corresponding to the guide tracks in the respective clamp members, the outer quadrants being rotatable with said quadrant members, and -

spacers provided between said outer quadrants and respective clamp members, said spacers having surfaces contacting the respective clamp member and corresponding outer quadrant, said clamp members, outer quadrants, spacers and saddle members through which said adjustment rod extends being clamped  
5 together by a tensioning device on said rod.

15. The support stand according to Claim 1 wherein the adjustable body includes an elongate shaft.

16. The support stand according to Claim 1 to 14 wherein the stand body is received within a mounting in said base, said base mounting having a variable  
10 fixing mechanism to allow the height of said headpiece to be adjusted and secured relative to said base.

17. The support stand according to Claim 16 wherein the variable fixing mechanism includes a bush assembly having a collar therein for receiving said stand body, said collar having a fixed end and a variable end, extending through  
15 said housing, said fixed end being secured to a clamp base, said collar extending around said stand body and said variable end being adjustably received within said clamp base for tensioning the collar against the stand body.

18. The support stand according to Claim 17 wherein the variable end of said collar extends through said clamp base to a tensioning device for tightening and  
20 loosening said collar relative to said stand body.

19. The support stand according to Claim 1, 5 or 16 wherein said base includes at least three legs for supporting said stand body and headpiece, said legs being pivotally received within a housing in which only limited upward pivotal movement is permitted.

20. The support stand according to Claim 19 wherein each leg is pivotally mounted within said housing, said housing having a limiting edge spaced from said pivotal mounting providing an upper limitation on the rotation of said leg relative to said housing.
- 5 21. The support stand according to Claim 19 or 20 wherein each leg has formed therein a foot having a means for securement to a supporting surface.
22. A support stand having a base, a stand body and a headpiece pivotally mounted to said stand body, said headpiece being provided with a quadrant clamp including two clamp members positioned either side of said stand body, said  
10 quadrant members having a quadrant guide track formed therein, a fulcrum rod extending through said clamp members and said stand body, said clamp members being pivotal about said fulcrum rod, and an adjustment rod extending through said stand body and aligned quadrant guide tracks of the respective clamp members, the position of said adjustment rod in said quadrant guide tracks being securable to fix  
15 the position of said headpiece relative to said stand body.
23. The support stand of Claim 22 wherein the quadrant clamp further includes saddle members for providing a fixable mounting to said stand body and locking surfaces for the inner surface of respective clamp members.
24. The support stand according to Claim 23 wherein the adjustment rod and  
20 fulcrum rod extend through respective saddle members and said stand body.
25. The support stand according to Claim 23 and 24 wherein the quadrant clamp further includes outer quadrants having guide tracks corresponding to the quadrant guide tracks in the respective quadrant members, the outer quadrants being rotatable with said quadrant members, and spacers provided between said  
25 outer quadrants and respective clamp members, said spacers having surfaces

contacting the respective clamp members and corresponding outer quadrants, said clamp members, outer quadrants, spacers and saddle members through which said adjustment rod extends being clamped together by a tensioning device on said rod.

26. A stand support having a base, a stand body and a headpiece, said stand  
5 body being received within a mounting base, said base mounting having a variable fixing mechanism to allow the height of said headpiece to be adjusted and secured relative to said base, said variable fixing mechanism including a housing having a collar therein for receiving said stand body, said collar having a fixed end and a variable end extending through said housing, said fixed end being secured to a  
10 clamp base, said collar extending around said stand body and said variable end being adjustably received within said clamp base for tensioning the collar against the stand body.

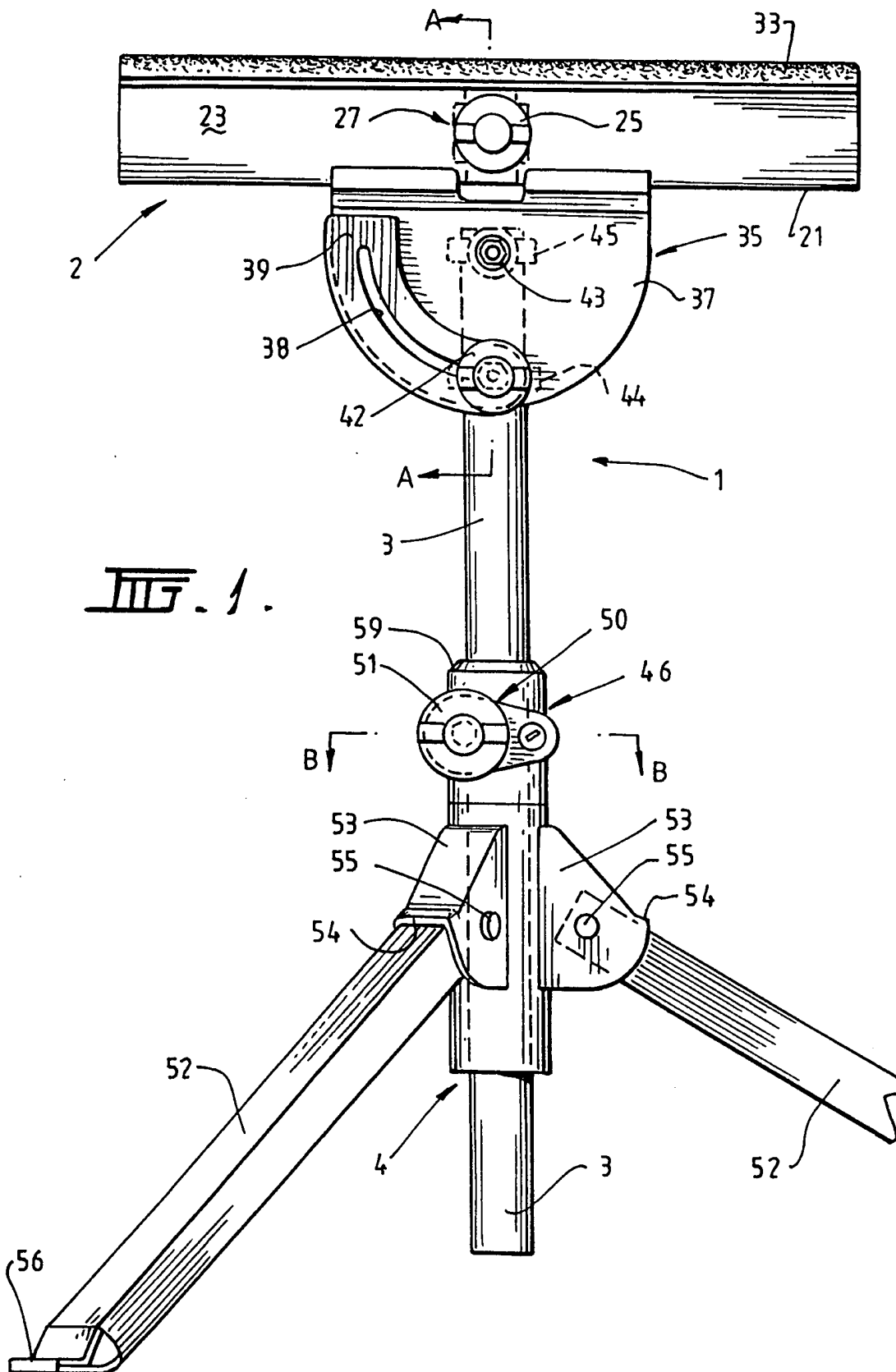
27. The stand support according to Claim 26 wherein tensioning of the collar against the stand body clamps the stand body to said housing.

15 28. The support stand according to Claim 26 or claim 27 wherein the variable end of said collar extends through said clamp base to a tensioning device for tightening and loosening said collar relative to said stand body.

29. The stand support according to Claim 26 wherein the base includes at least three legs for supporting said stand body and headpiece, said legs being pivotally  
20 received within a housing in which only limited upward pivotal movement is permitted.



1/3



2/3

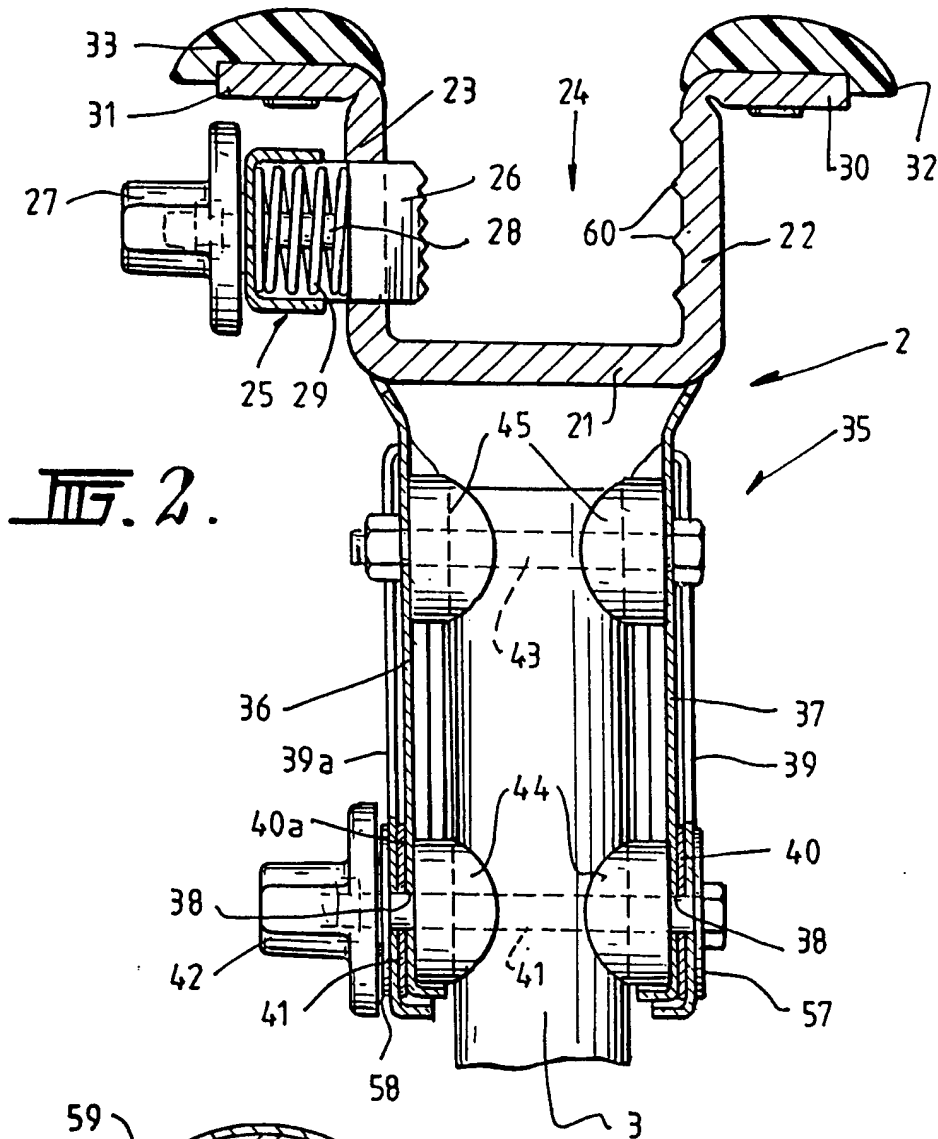


Fig. 2.

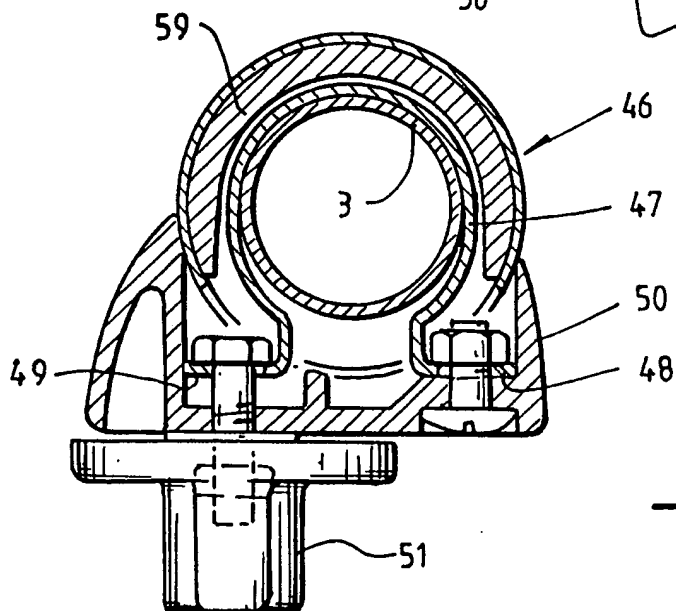
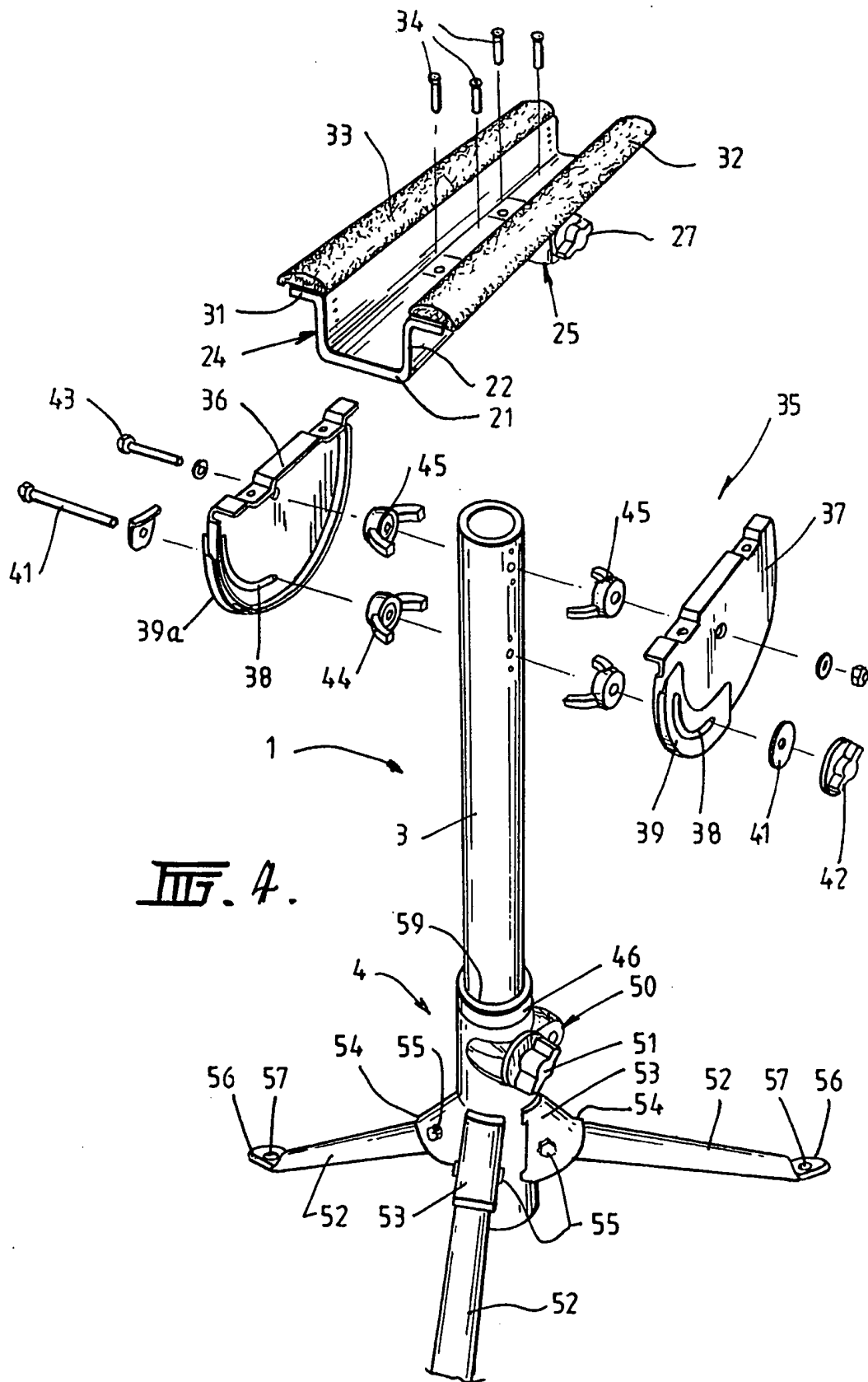


Fig. 3.



## INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/AU 98/00454

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>												
Int Cl <sup>6</sup> : B25B 1/20, 1/22; B25H 1/08, 1/16, 1/18; F16M 11/10, 11/28, 11/40												
According to International Patent Classification (IPC) or to both national classification and IPC												
<b>B. FIELDS SEARCHED</b>												
Minimum documentation searched (classification system followed by classification symbols) B25B 1/20, 1/22; B25H 1/08, 1/18												
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched												
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DERWENT												
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>												
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
X	DE 3714336 C1 (KUEI) 1 December 1988 Figures	1-21										
X	DE 3603426 A1 (PEDDINGHAUS) 6 August 1987 Figures	1-21										
X	DE 3313556 A1 (HOFFMAN GmbH) 25 October 1984 Figures	1-21										
X	US 5630576 A (WILLIAMS) 20 May 1997 Figures	1-21										
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input type="checkbox"/> See patent family annex												
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier document but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention											
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone											
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art											
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family											
"P" document published prior to the international filing date but later than the priority date claimed												
Date of the actual completion of the international search 22 July 1998		Date of mailing of the international search report 7 AUG 1998										
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer  JAGDISH BOKIL Telephone No.: (02) 6283 2371										

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**INTERNATIONAL SEARCH REPORT**

International Application No.

PCT/AU 98/00454

**Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

**Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

Please refer to Supplemental Box II

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 1-21

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

**Supplemental Box**

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No:II

This International Searching Authority found multiple inventions in this international application, as follows:

1. Invention 1: Claims 1-21 are directed to a support stand having a base, a body and a headpiece, said headpiece including a base section from which extends a U-shaped channel provided with an adjustable head clamp to allow clamping of a work piece. It is considered that the U-shaped channel and the adjustable head clamp, which jointly constitute a clamping means, comprise a first 'special technical feature'.
2. Invention 2: Claims 22-25 are directed to a support stand having a base a body and a headpiece, said headpiece being provided with a quadrant clamp having a guide track and fulcrum rod to allow the headpiece to pivot. It is considered that the quadrant clamp having a guide track and fulcrum rod, which constitutes a pivoting means, comprises a second 'special technical feature'.
3. Invention 3: Claims 26-29 are directed to a support stand having a base, a body and a headpiece, said body being mounted on a mounting base, the mounting base having a variable fixing mechanism to allow the height of the headpiece to be adjusted. It is considered that the variable fixing means, which constitutes a height-adjusting means, comprises a third 'special technical feature'.

Since the above-mentioned groups of claims do not share any of the technical features identified, a technical relationship between the inventions does not exist. Accordingly, the claims do not relate to one invention or to a single inventive concept, a priori.

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